
Network signaling

The Network Signaling (NSIG) feature provides the required signaling protocol to interface nodes with ESN mains, nodes with other nodes, and nodes with Electronic Tie Network (ETN) switches.

Installing NSIG at an conventional main enhances it and it becomes an ESN main. When callers at an ESN main place calls through a node with NSIG, their NCOS or TCOS travel with the call and are interpreted at other NSIG equipped switches. The tie trunk settings determine and control the operation of this feature.

When the NSIG feature is equipped at a switch, there are options available (Route Data Block, LD 16) to define the signaling arrangements between that switch and any other switch that are connected to it by means of tie trunks. These options define what call information is to be transmitted to a connected switch and what call information is to be received from a connected switch. The option selected depends on the type of connected switch (ESN node, ESN main, conventional main, ETN) and the options (for example, CCBQ, CBQCM) that are available to the connected switch.

The signaling options are: STD (standard), ESN, ESN2, ESN3, ESN5 (Electronic Switched Network), and ETN (Electronic Tie Network).

STD Arranges the tie trunk group for transmission/reception of the called number between switches. Sends outpulsed digits.

ESN (X11 release 2 only) Arranges the tie trunk group for transmission/reception of the call type, NCOS/TCOS, and called number between switches, and is required on systems equipped with the CCBQ/CBQCM feature. Sends call type, NCOS or TCOS, and dialed digits.

ESN2 (X11 release 3 and later) Arranges the tie group as described for ESN in X11 release 2. Used unless switch has NXFER or Satellite Link Control (SAT).

ESN3 (X11 release 3) Arranges the tie group as described for ESN in X11 release 2 and is required on systems equipped with the NXFER or Satellite Link Control features.

ESN5 (X11 release 5 and later) Arranges the tie group as described for ESN in X11 release 2; needed with DTI.

ETN Arranges the tie trunk group for transmission/reception of the called number and TCOS/TCM between switches and is used when connected to an ETN switch. Sends outpulsed digits and TCOS.

Application

Following is a description of how these options are applied to accommodate the different switch types that can be connected to an ESN main or ESN node that is equipped with the NSIG feature.

ESN node An ESN node can be connected by means of tie trunks to another ESN node, an ESN main, a Conventional main, and/or an ETN Switch.

- If the ESN node connects to another ESN node, both ends of the connecting tie trunk group are defined with the ETN option.
- If the ESN node is equipped with X11 release 2 and connects to an ESN main equipped with X11 release 2, both ends of the connecting tie trunk group are defined with the ESN option.
- If the ESN node is equipped with X11 release 3 and the ESN main is equipped with X11 release 3, both ends of the connecting tie trunk group are defined with the ESN3 option.
- If the ESN node is equipped with X11 release 2 and the ESN main is equipped with X11 release 3, the node end of the connecting tie trunk group is defined with the ESN option, and the Main end is defined with the ESN2 option.
- If the ESN node is equipped with X11 release 3 and the ESN main is equipped with X11 release 2, the node end of the connecting tie trunk group is defined with the ESN2 option, option and the Main end is defined with the ESN option.

- If the ESN node connects to a Conventional main, the node-end of the tie trunk group is defined with the STD option.
- If the ESN node connects to an ETN switch, the node-end of the tie trunk group is defined with the ETN option.

ESN main An ESN main can be connected by means of tie trunks to an ESN node and satellite switches.

- If the ESN main is equipped with X11 release 2 and connects to a node equipped with X11 release 2, both ends of the connecting tie trunk group are defined with the ESN option.
- If the ESN main is equipped with X11 release 3 and the ESN node is equipped with X11 release 3, both ends of the connecting tie trunk group are defined with the ESN3 option.
- If the ESN main is equipped with X11 release 2 and the ESN node is equipped with X11 release 3, the Main end of the connecting tie trunk group is defined with the ESN option, and the node end is defined with the ESN2 option.
- If the ESN main is equipped with X11 release 3 and the ESN node is equipped with X11 release 2, the Main end of the connecting tie trunk group is defined with the ESN2 option, and the node end is defined with the ESN option.
- If there are satellite switches (non-ESN) connected to the ESN main, the main-end of the tie trunk groups from the satellite switches are defined with the STD option.

Requirements

The following requirements apply:

- An ESN main can connect to only one ESN node. Both switches must have NSIG for NSIG related features.
- TIE trunks between ESN nodes and ESN Mains must be arranged for Dual Tone Multi-Frequency (DTMF) sending/receiving, wink-start operation and have answer supervision.
- ESN node compatibility with ETN switches is limited to 7-digit on-network, 10-digit off-network and DSC CDP calls.

Satellite link control

Tandem trunk calls, when connected through more than one communications satellite trunk, are subject to transmission distortion due to propagation to and from communications satellites. The Satellite Link Control feature ensures that the configuration of a call does not include more than one communications satellite trunk.

Requirements

- This feature applies to ESN network calls (NARS/BARS/CDP) only.
- ESN Proprietary Signaling (NSIG) is required among ESN switches.
- Routes which receive digits from satellites or send digits to satellites have to be marked as SATELLITE routes.